AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An electrical device comprising at least ~~four~~ three semiconductor nanowires assembled together in electrical communication as a component of the electrical device, a first semiconductor nanowire of the at least three semiconductor nanowires defining an emitter of a transistor, a second semiconductor nanowire of the at least three semiconductor nanowires in contact with the first semiconductor nanowire and defining a base of the transistor, a third semiconductor nanowire of the at least three semiconductor nanowires in contact with the second semiconductor nanowire and defining a collector of a transistor, each of the at least ~~four~~ three semiconductor nanowires comprising at least one portion having a smallest width of less than 50 nanometers, wherein the at least ~~four~~ three semiconductor nanowires are ~~selected~~ taken from a population of semiconductor nanowires having a variation in individual average diameter of less than 20% relative to each other ~~and~~, wherein the at least three semiconductor nanowires are each made by a process ~~of~~ comprising:

selecting a population of catalyst colloid particles having a variation in diameter of less than 20%, and

growing the population of semiconductor nanowires catalytically from the catalyst colloid particles,

thereby producing the population of semiconductor nanowires having a variation in individual average diameter of less than 20% from which the at least ~~four~~ three semiconductor nanowires having a variation in individual average diameter of less than 20% are ~~selected~~ taken.

2. (Currently Amended) The device of claim 1, wherein ~~the device includes~~ at least one of the at least three semiconductor nanowires ~~comprising~~ comprises:

an interior core comprising a first semiconductor material; and

one or more exterior shells exterior to the interior core, at least one of the exterior shells comprising a different material than the first semiconductor material.

3. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an elemental semiconductor.

4. (Withdrawn) The semiconductor of claim 3, wherein the elemental semiconductor is selected from a group consisting of: Si, Ge, Sn, Se, Te, B, Diamond and P.

5. (Previously Presented) The device of claim 1, wherein the device includes at least one semiconductor nanowire comprising a solid solution of elemental semiconductors.

6. (Previously Presented) The device of claim 5, wherein the solid solution is selected from a group consisting of: B-C, B-P(BP_6), B-Si, Si-C, Si-Ge, Si-Sn and Ge-Sn.

7. (Previously Presented) The device of claim 1, wherein the device includes at least one semiconductor nanowire comprising a Group IV-Group IV semiconductor material.

8. (Previously Presented) The device of claim 7, wherein the Group IV-Group IV semiconductor material is SiC.

9. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a Group III-Group V semiconductor.

10. (Withdrawn) The semiconductor of claim 9, wherein the Group III-Group V semiconductor is selected from a group consisting of: BN/BP/BAs, AlN/AlP/AlAs/AlSb, GaN/GaP/GaAs/GaSb, InN/InP/InAs/InSb.

11. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an alloy comprising a combination of two or more Group III-Group V semiconductors from a group consisting of: BN/BP/BAs, AlN/AlP/AlAs/AlSb, GaN/GaP/GaAs/GaSb, InN/InP/InAs/InSb.

12. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a Group II-Group VI semiconductor.

13. (Withdrawn) The semiconductor of claim 12, wherein the semiconductor is selected from a group consisting of: ZnO/ZnS/ZnSe/ZnTe, CdS/CdSe/CdTe, HgS/HgSe/HgTe, BeS/BeSe/BeTe/MgS/MgSe.

14. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an alloy comprising a combination of two or more Group II-Group VI semiconductors from a group consisting of: ZnO/ZnS/ZnSe/ZnTe, CdS/CdSe/CdTe, HgS/HgSe/HgTe, BeS/BeSe/BeTe/MgS/MgSe.

15. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an alloy comprising a combination of a Group II-Group VI semiconductors from a group consisting of: ZnO/ZnS/ZnSe/ZnTe, CdS/CdSe/CdTe, HgS/HgSe/HgTe, BeS/BeSe/BeTe/MgS/MgSe and a Group III-Group V semiconductors from a group consisting of: BN/BP/BAs, AlN/AlP/AlAs/AlSb, GaN/GaP/GaAs/GaSb, InN/InP/InAs/InSb.

16. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a Group IV-Group VI semiconductor.

17. (Withdrawn) The semiconductor of claim 16, wherein the semiconductor is selected from a group consisting of: GeS, GeSe, GeTe, SnS, SnSe, SnTe, PbO, PbS, PbSe, PbTe.

18. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a Group I-Group VII semiconductor.

19. (Withdrawn) The semiconductor of claim 18, wherein the semiconductor is selected from a group consisting of: CuF, CuCl, CuBr, CuI, AgF, AgCl, AgBr, AgI.

20. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a semiconductor selected from a group consisting of: BeSiN2, CaCN2, ZnGeP2, CdSnAs2, ZnSnSb2, CuGeP3, CuSi2P3, (Cu, Ag)(Al, Ga, In, Tl, Fe)(S, Se, Te)2, Si3N4, Ge3N4, Al2O3, (Al, Ga, In)2(S, Se, Te)3 and Al2CO.

21. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a p-type dopant.

22. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an n-type dopant from.

23. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a p-type dopant from Group III of the periodic table.

24. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an n-type dopant from Group V of the periodic table.

25. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a p-type dopant selected from a group consisting of: B, Al and In.

26. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises an n-type dopant selected from a group consisting of: P, As and Sb.

27. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a p-type dopant from Group II of the periodic table.

28. (Withdrawn) The semiconductor of claim 27, wherein the p-type dopant is selected from a group consisting of: Mg, Zn, Cd and Hg.

29. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor comprises a p-type dopant from Group IV of the periodic table.

30. (Withdrawn) The semiconductor of claim 29, wherein the p-type dopant is selected from a group consisting of: C and Si.

31. (Withdrawn) The semiconductor of claim 27, wherein the n-type is selected from a group consisting of: Si, Ge, Sn, S, Se and Te.

32-37. (Cancelled)

38. (Previously Presented) The device of claim 1, wherein the smallest width is less than 40 nanometers.

39. (Previously Presented) The device of claim 1, wherein the smallest width is less than 20 nanometers.

40. (Previously Presented) The device of claim 1, wherein the smallest width is less than 10 nanometers.

41. (Previously Presented) The device of claim 1, wherein the smallest width is less than 5 nanometers.

42. (Currently Amended) The device of claim 1, wherein at least one of the at least ~~four~~ three semiconductor nanowires is elongated, and the at least one portion of the at least one semiconductor nanowire is a longitudinal section.

43. (Previously Presented) The device of claim 42, wherein the longitudinal section has a ratio of the length of the section to a longest width greater than 4:1.

44. (Previously Presented) The device of claim 42, wherein the longitudinal section has a ratio of the length of the section to a longest width greater than 10:1.

45. (Previously Presented) The device of claim 42, wherein the longitudinal section has a ratio of the length of the section to a longest width greater than 100:1.

46. (Previously Presented) The device of claim 42, wherein the longitudinal section has a ratio of the length of the section to a longest width greater than 1000:1.

47. (Currently Amended) The device of claim 1, wherein ~~the device includes~~ at least one of the at least three semiconductor nanowires ~~comprising~~ comprises a single crystal.

48. (Cancelled)

49. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor is n-doped.

50. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor is p-doped.

51. (Withdrawn) The semiconductor of claim 1, wherein the semiconductor is magnetic.

52. (Withdrawn) The semiconductor of claim 51, wherein the semiconductor comprises a dopant making the semiconductor magnetic.

53. (Withdrawn) The semiconductor of claim 51, wherein the semiconductor is ferromagnetic.

54. (Withdrawn) The semiconductor of claim 53, wherein the semiconductor comprises a dopant that makes the semiconductor ferromagnetic.

55. (Withdrawn) The semiconductor of claim 54, wherein the semiconductor comprises manganese.

56. (Currently Amended) An electrical device comprising at least ~~four~~ three semiconductor nanowires assembled together in electrical communication as a component of the electrical device, a first semiconductor nanowire of the at least three semiconductor nanowires defining an emitter of a transistor, a second semiconductor nanowire of the at least three semiconductor nanowires in contact with the first semiconductor nanowire and defining a base of the transistor, a third semiconductor nanowire of the at least three semiconductor nanowires in contact with the second semiconductor nanowire and defining a collector of a transistor, each of the at least ~~four~~ three semiconductor nanowires having a longitudinal axis such that, at any point along the longitudinal axis, the semiconductor has a largest cross-sectional dimension less than 50 nanometers, wherein the at least ~~four~~ three semiconductor nanowires are ~~selected~~ taken from a population of semiconductor nanowires having a variation in individual average diameter of less than 20% relative to each other ~~and~~, wherein the at least three semiconductor nanowires are each made by a process ~~of~~ comprising:

selecting a population of catalyst colloid particles having a variation in diameter of less than 20%, and

growing the population of semiconductor nanowires catalytically from the catalyst colloid particles,

thereby producing the population of semiconductor nanowires having a variation in individual average diameter of less than 20% from which the at least ~~four~~ three semiconductor nanowires having a variation in individual average diameter of less than 20% are ~~selected~~ taken.

57. (Currently Amended) The device of claim 56, wherein at least one of the at least ~~four~~ three semiconductor nanowires comprises:

an interior core comprising a first semiconductor material; and

one or more exterior shells exterior to the interior core, at least one of the exterior shells comprising a different material than the first semiconductor material.

58. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ three semiconductor nanowires, a ratio of the length of the section to a longest width is greater than 4:1.

59. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ three semiconductor nanowires, a ratio of the length of the section to a longest width is greater than 10:1.

60. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ three semiconductor nanowires, a ratio of the length of the section to a longest width is greater than 100:1.

61. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ three semiconductor nanowires, a ratio of the length of the section to a longest width is greater than 1000:1.

62-67. (Canceled)

68. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ semiconductor nanowires, the at least one semiconductor nanowire has a smallest width less than 40 nanometers.

69. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ semiconductor nanowires, the at least one semiconductor nanowire has a smallest width less than 20 nanometers.

70. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ semiconductor nanowires, the at least one semiconductor nanowire has a smallest width less than 10 nanometers.

71. (Currently Amended) The device of claim 56, wherein, at any point along the longitudinal axis of at least one of the at least ~~four~~ semiconductor nanowires, the at least one semiconductor nanowire has a smallest width less than 5 nanometers.

72. (Previously Presented) The device of claim 56, wherein the device includes at least one semiconductor nanowire comprising a single crystal.

73-74. (Cancelled)

75. (Previously Presented) The device of claim 56, wherein the device includes at least one semiconductor nanowire that is n-doped.

76. (Previously Presented) The device of claim 56, wherein the device includes at least one semiconductor nanowire that is p-doped.

77-96. (Cancelled)

97. (Currently Amended) An electrical device comprising at least ~~four~~ three semiconductor nanowires assembled together in electrical communication as a component of the electrical device, a first semiconductor nanowire of the at least three semiconductor nanowires defining an emitter of a transistor, a second semiconductor nanowire of the at least three semiconductor nanowires in contact with the first semiconductor nanowire and defining a base of the transistor, a third semiconductor nanowire of the at least three semiconductor nanowires in contact with the second semiconductor nanowire and defining a collector of a transistor, each of the at least ~~four~~ three

semiconductor nanowires being ~~selected~~ taken from a population of semiconductor nanowires having a variation in individual average diameter of less than 20% relative to each other, each of the at least ~~four~~ three semiconductor nanowires independently being at least one of the following: a single crystal, an elongated semiconductor nanowire that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 50 nanometers, and a semiconductor nanowire with at least one portion having a smallest width of less than 50 nanometers, wherein a phenomena produced by a section of the semiconductor nanowire exhibits a quantum confinement caused by a dimension of the section, and wherein the at least ~~four~~ three semiconductor nanowires are each made by a process ~~of~~ comprising:

selecting a population of catalyst colloid particles having a variation in diameter of less than 20%, and

growing the population of semiconductor nanowires catalytically from the catalyst colloid particles,

thereby producing the population of semiconductor nanowires having a variation in individual average diameter of less than 20% from which the at least ~~four~~ three semiconductor nanowires having a variation in individual average diameter of less than 20% are ~~selected~~ taken.

98. (Currently Amended) The device of claim 97, wherein at least one of the at least ~~four~~ three semiconductor nanowires is elongated, and the dimension of the at least one semiconductor nanowire is a width at any point along a longitudinal section of the semiconductor nanowire.

99-101. (Cancelled)

102. (Withdrawn) The semiconductor of claim 98, wherein the longitudinal section is capable of transporting electrical carriers such that the electrical carriers are spin-polarized.

103. (Withdrawn) The semiconductor of claim 102, wherein the longitudinal section is capable of transporting electrical carriers such that the spin-polarized electrical carriers pass through the longitudinal section without losing spin information.

104. (Withdrawn) The semiconductor of claim 98, wherein the longitudinal section is capable of emitting light in response to excitation, wherein a wavelength of the emitted light is related to the width.

105. (Withdrawn) The semiconductor of claim 99, wherein the wavelength of the emitted light is proportional to the width.

106-108. (Cancelled)

109. (Withdrawn) A solution comprising one or more doped semiconductors, wherein at least one of the semiconductors is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers.

110. (Currently Amended) An electrical device comprising at least ~~four~~ three doped semiconductor nanowires assembled together in electrical communication as a component of the electrical device, a first semiconductor nanowire of the at least three semiconductor nanowires defining an emitter of a transistor, a second semiconductor nanowire of the at least three semiconductor nanowires in contact with the first semiconductor nanowire and defining a base of the transistor, a third semiconductor nanowire of the at least three semiconductor nanowires in contact with the second semiconductor nanowire and defining a collector of a transistor, the at least ~~four~~ three doped semiconductor nanowires being ~~selected~~ taken from a population of semiconductor nanowires having a variation in diameter of less than 20% relative to each other, wherein each of the at least ~~four~~ three doped semiconductor nanowires is independently at least one of the following: a single crystal, an elongated semiconductor nanowire that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 50 nanometers, and a semiconductor nanowire with at least one portion having a smallest width of less than 50 nanometers, wherein the at least ~~four~~

three semiconductor nanowires are each made by a process ~~of~~ comprising:

selecting a population of catalyst colloid particles having a variation in diameter of less than 20%, and

growing the population of semiconductor nanowires catalytically from the catalyst colloid particles,

thereby producing the population of semiconductor nanowires having a variation in individual average diameter of less than 20% from which the at least ~~four~~ three semiconductor nanowires having a variation in individual average diameter of less than 20% are ~~selected~~ taken.

111. (Withdrawn) The device of claim 110, wherein the device comprises at least two doped semiconductors, wherein both of the at least two doped semiconductors is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers, and wherein a first of the at least two doped semiconductors exhibits quantum confinement and a second of the at least two doped semiconductor manipulates the quantum confinement of the first.

112. (Cancelled)

113. (Withdrawn) The device of claim 111, wherein the at least two bulk-doped semiconductors are in physical contact with each other.

114. (Withdrawn) The device of claim 113, wherein a first of the at least two bulk-doped semiconductors is of a first conductivity type, and a second of the at least two bulk-doped semiconductors is of a second conductivity type.

115. (Withdrawn) The device of claim 114, wherein the first conductivity type is n-type, and the second type of conductivity type is p-type.

116. (Withdrawn) The device of claim 115, wherein the at least two bulk-doped semiconductors form a p-n junction.

117. (Cancelled)

118. (Currently Amended) The device of claim 110, wherein ~~the device includes~~ at least one of the at least three semiconductor nanowires ~~that~~ is elongated.

119. (Currently Amended) The device of claim 110, wherein ~~the device includes~~ at least one of the at least three semiconductor nanowires ~~comprising~~ comprises a single crystal.

120. (Currently Amended) The device of claim 110, wherein ~~the device includes~~ at least one of the at least three semiconductor nanowires ~~comprising~~ comprises:

an interior core comprising a first semiconductor material; and

an exterior shell comprising a different material than the first semiconductor material.

121. (Withdrawn) The device of claim 110, wherein the device comprises a switch.

122. (Withdrawn) The device of claim 110, wherein the device comprises a diode.

123. (Withdrawn) The device of claim 110, wherein the device comprises a Light-Emitting.

124. (Withdrawn) The device of claim 110, wherein the device comprises a tunnel diode.

125. (Withdrawn) The device of claim 110, wherein the device comprises a Schottky diode.

126. (Withdrawn) The device of claim 125, wherein the transistor comprises a Bipolar Junction Transistor.

127. (Withdrawn) The device of claim 125, wherein the transistor comprises a Field Effect Transistor.

128. (Withdrawn) The device of claim 110, wherein the device comprises an inverter.

129. (Withdrawn) The device of claim 128, wherein the inverter is a complimentary inverter.

130. (Withdrawn) The device of claim 110, wherein the device comprises an optical sensor.

131. (Withdrawn) The device of claim 110, wherein the device comprises a sensor for an analyte.

132. (Withdrawn) The device of claim 110, wherein the analyte is a DNA.

133. (Withdrawn) The device of claim 110, wherein the device comprises a memory device.

134. (Withdrawn) The device of claim 133, wherein the memory device is a dynamic memory device.

135. (Withdrawn) The device of claim 133, wherein the memory device is a static memory device.

136. (Withdrawn) The device of claim 110, wherein the device comprises a laser.

137. (Withdrawn) The device of claim 110, wherein the device comprises a logic gate.

138. (Withdrawn) The device of claim 137, wherein the logic gate is an AND gate.

139. (Withdrawn) The device of claim 137, wherein the logic gate is a NAND gate.

140. (Withdrawn) The device of claim 137, wherein the logic gate is an EXCLUSIVE-AND gate.

141. (Withdrawn) The device of claim 137, wherein the logic gate is a OR gate.

142. (Withdrawn) The device of claim 137, wherein the logic gate is a NOR gate.

143. (Withdrawn) The device of claim 137, wherein the logic gate is an EXCLUSIVE-OR gate.

144. (Withdrawn) The device of claim 110, wherein the device comprises a latch.

145. (Withdrawn) The device of claim 110, wherein the device comprises a register.

146. (Withdrawn) The device of claim 110, wherein the device comprises clock circuitry.

147. (Withdrawn) The device of claim 110, wherein the device comprises a logic array.

148. (Withdrawn) The device of claim 110, wherein the device comprises a state machine.

149. (Withdrawn) The device of claim 110, wherein the device comprises a programmable circuit.

150. (Withdrawn) The device of claim 110, wherein the device comprises an amplifier.

151. (Withdrawn) The device of claim 110, wherein the device comprises a transformer.

152. (Withdrawn) The device of claim 110, wherein the device comprises a signal processor.

153. (Withdrawn) The device of claim 110, wherein the device comprises a digital circuit.

154. (Withdrawn) The device of claim 110, wherein the device comprises an analog circuit.

155. (Withdrawn) The device of claim 110, wherein the device comprises a light emission source.

156. (Withdrawn) The device of claim 155, wherein the light emission source emits light at a higher frequency than would the semiconductor if the semiconductor had a shortest width greater than the shortest width at any portion of the semiconductor.

157. (Withdrawn) The device of claim 110, wherein the device comprises a photoluminescent device.

158. (Withdrawn) The device of claim 110, wherein the device comprises an electroluminescent device.

159. (Withdrawn) The device of claim 110, wherein the device comprises a rectifier.

160. (Withdrawn) The device of claim 110, wherein the device comprises a photodiode.

161. (Withdrawn) The device of claim 110, wherein the device comprises a p-n solar cell.

162. (Withdrawn) The device of claim 110, wherein the device comprises a phototransistor.

163. (Withdrawn) The device of claim 110, wherein the device comprises a single-electron transistor.

164. (Withdrawn) The device of claim 110, wherein the device comprises a single photon emitter.

165. (Withdrawn) The device of claim 110, wherein the device comprises a single photon detector.

166. (Withdrawn) The device of claim 110, wherein the device comprises a spintronic device.

167. (Withdrawn) The device of claim 110, wherein the device comprises an ultra-sharp tip for atomic force microscope.

168. (Withdrawn) The device of claim 110, wherein the device comprises a scanning tunneling microscope.

169. (Withdrawn) The device of claim, wherein the device comprises a field emission device

170. (Withdrawn) The device of claim, wherein the device comprises a photoluminescence tag

171. (Withdrawn) The device of claim, wherein the device comprises a photovoltaic device.

172. (Withdrawn) The device of claim, wherein the device comprises photonic band gap materials.

173. (Withdrawn) The device of claim 110, wherein the device comprises a scanning near field optical microscope tips.

174. (Withdrawn) The device of claim 110, wherein the device comprises a circuit that has digital and analog components.

175. (Currently Amended) The device of claim 110, wherein the device comprises another semiconductor nanowire that is electrically coupled to at least one of the at least ~~four~~ three doped semiconductor nanowires.

176. (Withdrawn) The device of claim 175, wherein the other semiconductor is a bulk-doped semiconductor comprising at least one portion having a smallest width of less than 500 nanometers.

177. (Withdrawn) The device of claim 110, wherein the device comprises another semiconductor that is optically coupled to the at least one bulk-doped semiconductor.

178. (Withdrawn) The device of claim 177, wherein the other semiconductor is a bulk-doped semiconductor comprising at least one portion having a smallest width of less than 500 nanometers.

179. (Withdrawn) The device of claim 110, wherein the device comprises another semiconductor that is magnetically coupled to the at least one bulk-doped semiconductor.

180. (Withdrawn) The device of claim 179, wherein the other semiconductor is a bulk-doped semiconductor comprising at least one portion having a smallest width of less than 500 nanometers.

181. (Currently Amended) The device of claim 110, wherein the device comprises another semiconductor nanowire that physically contacts at least one of the at least ~~four~~ three doped semiconductor nanowires.

182. (Withdrawn) The device of claim 179, wherein the other semiconductor is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers.

183. (Currently Amended) The device of claim 110, wherein at least one of the at least ~~four~~ three semiconductor nanowires is coupled to an electrical contact.

184. (Withdrawn) The device of claim 110, wherein the at least one semiconductor is coupled to an optical contact.

185. (Withdrawn) The device of claim 110, wherein the at least one semiconductor is coupled to a magnetic contact.

186. (Currently Amended) The device of claim 110, wherein a conductivity of at least one of the at least ~~four~~ three semiconductor nanowires is controllable in response to a signal.

187. (Previously Presented) The device of claim 186, wherein the conductivity of the at least one semiconductor nanowire is controllable to have any value within a range of values.

188. (Previously Presented) The device of claim 186, wherein the at least one semiconductor nanowire is switchable between two or more states.

189. (Previously Presented) The device of claim 188, wherein the at least one semiconductor nanowire is switchable between a conducting state and an insulating state by the signal.

190. (Withdrawn) The device of claim 188, wherein two or more states of the at least one semiconductor are maintainable without an applied signal.

191. (Previously Presented) The device of claim 186, wherein the conductivity of the at least one semiconductor nanowire is controllable in response to an electrical signal.

192. (Withdrawn) The device of claim 186, wherein the conductivity of the at least one semiconductor is controllable in response to an optical signal.

193. (Withdrawn) The device of claim 186, wherein the conductivity of the at least one semiconductor is controllable in response to a magnetic signal.

194. (Previously Presented) The device of claim 186, wherein the conductivity of the at least one semiconductor nanowire is controllable in response to a signal of a gate terminal.

195. (Previously Presented) The device of claim 194, wherein the gate terminal is not in physical contact with the at least one semiconductor nanowire.

196. (Withdrawn) The device of claim 110, wherein at least two of the semiconductors form an array, and at least one of the semiconductors in the array is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers.

197. (Withdrawn) The device of claim 196, wherein the array is an ordered array.

198. (Withdrawn) The device of claim 196, wherein said array is not an ordered array.

199. (Withdrawn) The device of claim 110, wherein the device comprises two or more separate and interconnected circuits, at least one of the circuits not comprising a doped semiconductor that is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers.

200. (Withdrawn) The device of claim 110, wherein the device is embodied on a chip having one or more pinouts.

201. (Withdrawn) The device of claim 200, wherein the chip comprises separate and interconnected circuits, at least one of the circuits not comprising a doped semiconductor that is at least one of the following: a single crystal, an elongated and bulk-doped semiconductor that, at any point along its longitudinal axis, has a largest cross-sectional dimension less than 500 nanometers, and a free-standing and bulk-doped semiconductor with at least one portion having a smallest width of less than 500 nanometers.

202-260. (Cancelled)

261. (Withdrawn) A semiconductor device, comprising

a silicon substrate having an array of metal contacts

a crossbar switch element formed in electrical communication with the array and having a first bar formed of a p-type semiconductor nanowire, and

a second bar formed of an n-type semiconductor nanowire and being spaced away from the first bar and being disposed transversely thereto.

262. (Withdrawn) A semi device of claim 261, wherein the second bar is spaces between 1-10 nm from the first bar.

263-373. (Cancelled)

374. (Currently Amended) A device comprising:

a substrate including a region having at least ~~four~~ three semiconductor nanowires deposited thereon, the at least ~~four~~ three semiconductor nanowires assembled together in electrical communication as a component of an electrical device, the at least ~~four~~ three semiconductor nanowires each comprising at least one portion having a smallest width less than 50 nanometers, wherein the at least ~~four~~ three semiconductor nanowires are ~~selected~~ taken from a population of

semiconductor nanowires having a variation in individual average diameter of less than about 20% relative to each other.

375. (Previously Presented) The device of claim 374, wherein the semiconductor nanowires are deposited from solution onto the substrate.

376. (Currently Amended) The device of claim 374, wherein the at least ~~four~~ three semiconductor nanowires have a variation in diameter of less than 10%.

377. (Currently Amended) The device of claim 374, wherein the at least ~~four~~ three semiconductor nanowires are grown from size-selected catalyst colloid particles.

378-500. (Cancelled)